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**Abstract of the Disclosure**

The invention relates to a method for producing metal matrix composite materials, including at least one proportion of magnesium or one magnesium alloy and involving at least one production step in which a thixomolding ensues. According to the invention, an  $Mg_2Si$  phase having a volume fraction of at least 2% is incorporated in a metal matrix preferably comprised of magnesium or of a magnesium alloy. The inventive method uses the thixomolding method for the in-situ production of a metallic composite material and is advantageous in that a broad range of adjustable volume fractions of the  $Mg_2Si$  phase in the composite material results whereby enabling the properties of the composite material to be individually modified. The inventive metal matrix composite material is particularly suited for producing thermally stressed parts of motor vehicles such as pistons or the like.